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BULLETIN

of the

ECOLOGICAL SOCIETY OF AMERICA

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PROGRAMME

Of the Meeting at Baltimore, December 26, 27, 28, 1918

Under the Auspices of

THE JOHNS HOPKINS UNIVERSITY

And in Affiliation with the American Association for the Advancement of Science.

OFFICERS

President, Henry C. Cowles, University of Chicago.

Vice-President, Robert E. Coker, Bureau of Fisheries.

Secretary-Treasurer, Forrest Shreve, Desert Laboratory, Tucson, Arizona

HEADQUARTERS

Hotel Rennert, Saratoga and Liberty Streets. Persons arriving at Camden Station will take cars going to the right in front of station, marked "John St." or "Columbia Ave."; alighting at Saratoga St. and walking one block to the right. Persons arriving at Union Station will take busses going to the left (South) in front of station, alighting at Saratoga St. and walking one block to the right.

PLACES OF MEETING

The meetings will be held in Room 103 Gilman Hall, Johns Hopkins University. The University may be reached from Hotel Rennert by walking one block to the right on emerging from the hotel and taking a bus going left (North) on Charles St., alighting at 32nd St. Gilman Hall is the large building with clock tower.

THURSDAY, DECEMBER 26TH.

The Registration Headquarters of the American Association will be found in the lobby of Gilman Hall, Johns Hopkins University.

AFTERNOON SESSION

2:00 P. M., Room 103 Gilman Hall.

SESSION FOR THE READING OF PAPERS.

C. C. ADAMS, Syracuse University. An Ecological Survey of the Palisades Interstate Park (15 min., illustrated).

D. T. MacDOUGAL, Carnegie Institution. Continuous Measurement of tree growth by a newly designed dendrograph (20 min.).

EDITH B. SHREVE, Desert Laboratory. A Method for Determining the Surface Temperature of Leaves (10 min.).

Describes a method by which a thermo-couple and portable galvanometer may be used to secure surface temperature of leaves to within 0.1degrees C. The apparatus requires no ice nor warmed water and is suited to field and laboratory use.

H. N. WHITFORD, Yale University. The Forest Formation of British Columbia (20 min.).

Need of the subdivision of the western coniferous forest formation has already been recognized. Danger of making too many or too few types. The grouping of distinct formations is often necessary for graphic presentation. Differences due to altitude and latitude should be more recognized in delimiting the formations. Brief description of the primary and secondary formations, and of the most important successive stages.

FORREST SHREVE, Desert Laboratory. Types of Chaparral in central California as determined by environmental conditions (20 min., illustrated.

Chaparral is the most abundant vegetation of the mountains of Monterey and San Luis Obispo counties. Its composition varies greatly with coastal or landward exposure, with northern or southern slope-exposure, with elevation, and with soil. A preliminary examination of the types of chaparral has been made and these are described in connection with the chief environmental differences.

E. P. CHURCHILL, JR., Bureau of Fisheries. The Economic Significance of the Migration of the Blue Crab in Chesapeake Bay (15 min.).

As one result of an investigation of the life history of the blue crab, made for the United States Bureau of Fisheries during 1917, it became apparent that there exists a vital relationship between the migrations of this crustacean and the crabbing industry of Chesapeake Bay. As is well known, the soft crabbing industry, which depends upon an abundance of molting crabs, is practically confined to the waters of the bay lying north of the mouth of the Rappahannock River on the west and Onancock, Va., on the east. South of these points, the crabbing industry is limited to the marketing of hard crabs, usually adult crabs. The center of the soft crabbing industry is Crisfield, Md.

In brief it was found that nearly all the crabs are hatched in the southern part of the bay during June and July of each year. During June, about eighty percent of the crabs found in this region are females bearing eggs. Practically no sponge crabs are found as far north as Maryland waters. The juvenile crabs migrate northward and during the following spring and summer mature, largely in Maryland waters, the successive molting stages furnishing a sufficient abundance to maintain the soft crab industry. When sexual maturity is reached, about the middle of the first summer in this region, mating occurs and the fertilized females move south again and pass the winter on the bottom in the deeper waters of the southern part of the bay. During June and July of the ensuing year the eggs are deposited upon the swimmerets and hatched. This is in brief the life cycle of the blue crab of the bay.

It will thus be apparent that protective measures, designed to insure sufficient supply of crabs to maintain the industry, must be somewhat different in the two states embracing the waters of Chesapeake Bay. In Virginia, which includes the lower part of the bay, where the impregnated and egg-bearing female crabs are mainly found, legislation should prevent undue use of this class of crabs. In Maryland, where the most of the molting crabs occur, and practically no sponge crabs are seen, a minimum size law should operate to protect the juvenile and unmated crabs. Only by hearty and unprejudiced co-operation between the authorities of the two states, will the proper protective measures be secured for the maintenance of the crabbing industry.

ECOLOGICAL DINNER

An informal dinner for all Ecologists, women and men, will be held at 6:15 p. m., Dec. 26, probably at Hotel Rennert. Adjournment will be made in time for the opening reception of the American Association and the Biological Smoker.

FRIDAY, DECEMBER 27TH.

MORNING SESSION.

10:00 A. M., Room 103 Gilman Hall

JOINT SESSION WITH THE AMERICAN SOCIETY OF ZOOLOGISTS.

W. J. CROZIER, University of Illinois. Further Contribution upon the Natural History of **Chromodorus zebra**: the question of adaptive coloration. A. S. Z.

EDWIN B. POWERS, Colorado College. The Hydrogen Iron Concentration of the sea water of Puget Sound and the Reactions of the herring (**Clupea pallasii** Cuvier) to Hydrogen on concentration in sea water. E. S. A.

The PH of Puget Sound in the vicinity of Friday Harbor varies with weather conditions, tides, depts, and locality. The herring reacts positively to a PH of 7.9 to 8.0. The reaction is positive to this PH concentration both from a lower and a higher PH.

H. H. REED, Cornell University. The Zoological Significance of the functional fenestral plates in the ear capsule of caudate amphibia. A. S. Z.

HARRY C. OBERHOLSER, National Museum. Ecological Investigations under the Federal Government (30 min.). E. S. A.

The most important ecological investigation under Federal Government auspices are carried on as a basis for other work, and are of far reaching importance. The Fish Commission studies the relation of fishes to their environment; the Forest Service that of trees; the Bureau of Plant Industry of various other plants, particularly with regard to plant diseases and plant introductions; the Bureau of Animal Industry, the life history of internal animal parasites; the Bureau of Entomology, the life history of insects in their relation to economic problems; and the Biological Survey, the relationss of animals, birds, and other animals to their environment and to each other, for the determination of the life zones of distribution.

W. H. LONGLEY, Goucher College. The Coloration and Habits of West Indian and Hawaiian reef fishes. A. S. Z.

HENRY S. PRATT, Haverford College. The Distribution of the Internal Parasites of the Fish and other Aquatic Vertebrates of Oneida Lake, New York. (15 min.). E. S. A.

V. E. SHELFORD, Illinois Natural History Survey. Suggestions as to the Climograph of deciduous forest invertebrates, as illustrated by experimental data on the codling moth. (20 min.). A. S. Z. and E. S. A.

W. J. CROZIER, University of Illinois. On the Nature and Source of some adaptive features in the ethiology of **Chiton**. A. S. Z.

AFTERNOON SESSION

2:00 P. M., Room 103 Gilman Hall.

ADDRESS OF RETIRING PRESIDENT, DR. HENRY C. COWLES, "ECOLOGY IN RECONSTRUCTION."

3:00 P. M., Room 103 Gilman Hall.

SESSION FOR READING OF BELATED PAPERS.

SATURDAY, DECEMBER 28TH.

MORNING SESSION

10:00 A. M., Gilman Hall.

JOINT SESSION WITH THE BOTANICAL SOCIETY OF AMERICA.

H. C. COWLES, University of Chicago. The Illinois Forestry Survey. (15 min., illustrated). E. S. A.

The Department of Registration and Education of the State of Illinois has undertaken the beginning of a State Forestry Survey along ecological lines. The object of the Survey is, first, to determine the extent and composition of the forests of the State, second, to determine the areas that should be kept in permanent forests either as natural history preserves or for economic utilization, third, to determine the areas that should be afforested or reforested and the tree species that should be utilized therein, and fourth, to determine in the several counties the areas best suited for natural history preserves in connection with the State Forest reserve Act now in force. From time to time it is expected to publish partial reports with maps and descriptive texts of the counties or parts of counties studied. The speaker has assumed responsibility for and begun work in Cook County and several of the adjoining counties in the northeastern part of the State and several other ecological workers have already assumed responsibility and begun work in some other counties.

ANSEL F. HEMENWAY. An anatomical explanation for the Climax Forests of the Pacific Northwest. (8 min.). B. S. A.

D. T. MacDOUGAL, Carnegie Institution. Causation of Succulence and Xerophily. (15 min.). E. S. A.

EARL S. JOHNSTON, Maryland Agricultural College. (Introduced by C. O. Appleman). Evaporation compared with vapor pressure deficit and wind velocity. (15 min.). B. S. A.

GEORGE E. NICHOLS, Yale University. Raised Bogs and Surgical Sphagnum in Eastern Maine. (10 min., illustrated). E. S. A.

Raised bogs occur in greater or less abundance along much of the Maine coast east of Casco Bay. They are most frequent and reach their best development east of Penobscot Bay. In Washington County they are a common bog-type and attain large proportions, frequently covering considerable tracts of country. The raised bog can be used as an indicator of climate conditions suitable to the growth of surgical qualities of sphagnum. Surgical sphagnum is to be looked for in greatest abundance and luxuriance in regions where raised bogs are well developed.

B. E. LIVINGSTON. A simple method for comparing different climatic temperature complexes in terms of the growth of a standard plant. (10 min.). B. S. A.

EDITH B. SHREVE, Desert Laboratory. The Role of Leaf Temperature in the Determination of the Index of Transpiring Power of Leaves. (10 min.). E. S. A.

The use of tripartite cobalt paper slips for determining the foliar transpiring power of leaves depends on the assumption that the slips are at air temperature. Determinations of the temperature of the slips made with the thermo-couple apparatus for leaf temperatures show that this assumption may be made with an error usually 2% and never more than 8%. Standardization of tripartite slips should be done within 2 or 3 degrees of 20° C. in order to make it safe to use air temperatures in the calculations.

B. E. LIVINGSTON and E. C. ROGERS. The measurement of the water-supplying power of field soils. (10 min.). B. S. A.

J. W. HARSBERGER, University of Pennsylvania. Alpine Fell-fields in eastern North America. (15 min.). E. S. A.

Recent studies of the vegetation of Greenland and Iceland have enlarged our conceptions of the nature of the fjeld (fell-field) and its vegetation. The comparison of American and foreign plant formations is a profitable piece of research, because it enables the American ecologist to formulate his knowledge with the experience of European ecologists to help him. In eastern America alpine fell-fields occur on Mt. Marcy, Mt. Katahdin and Mt. Washington, where the high mountain plants are scattered between blocks of granite and other crystalline rocks in true fell-field fashion, and where the conditions lead to various physiologic and structural adaptations of the true fell-field species.

H. N. WHITFORD, Yale University. The Araucaria (Parana Pine) Forests of Southern Brazil. (20 min.). E. S. A.

The botanical range of the Parana pine. The Parana pine formation, its location, relation to the prairie (campos) formation, and to the tropical hardwood forest. The ecological structure of the forest. May be divided into four stories. Character and composition of each story. Practical need of ecological studies in the formation.

AFTERNOON SESSION

2:00 P. M., Room 103 Gilman Hall

REPORTS OF CHAIRMEN OF COMMITTEES

BURTON E. LIVINGSTON. Committee on Climatic Conditions.

VICTOR E. SHELFORD. Committee on the Preservation of Natural Conditions for Ecological Study.

A. S. PEARSE. Committee on Fresh-Water Fish and Fisheries.

FORREST SHREVE. Committee on Soil Temperature.

GENERAL COMMITTEE BUSINESS.

BUSINESS SESSION.